King County

Technology Governance

Countywide Information Technology Equipment Replacement Guidelines

VERSION 2

Developed by Office of Information Resource Management
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INTRODUCTION

PURPOSE

This document provides a uniform approach to support each King County department and agency, in developing IT Equipment Replacement plans and processes. Departments may include the parts of the guidelines that are applicable to their operation, and should consider why portions are not addressed. These guidelines do not address budgeting and approval processes for equipment replacement.

BACKGROUND

The King County Strategic Technology Plan 2003-2005 (Revised) identifies Asset Management as one of 23 priority strategies. Equipment replacement is a key component of Asset Management. The Strategic Technology Plan identified several deficiencies related to King County's asset management for information technology:

- There is no countywide asset management program in place.
- There is no "one central source" for conducting asset management and no standard practice for planning for replacement.
- There is a lack of understanding of the basic purpose of such a program.

The Strategic Technology Plan findings have been the key reason driving the need to develop Countywide Equipment Replacement Guidelines.

DOCUMENT ORGANIZATION

The Guidelines section describes the processes and products recommended to develop an IT Equipment Replacement plan and to replace equipment and dispose of the old equipment.

The Appendix contains templates to be used as guides in developing an IT Equipment Replacement plan, an IT Equipment Replacement Financial Plan, and reference materials.

GUIDELINES

OVERVIEW

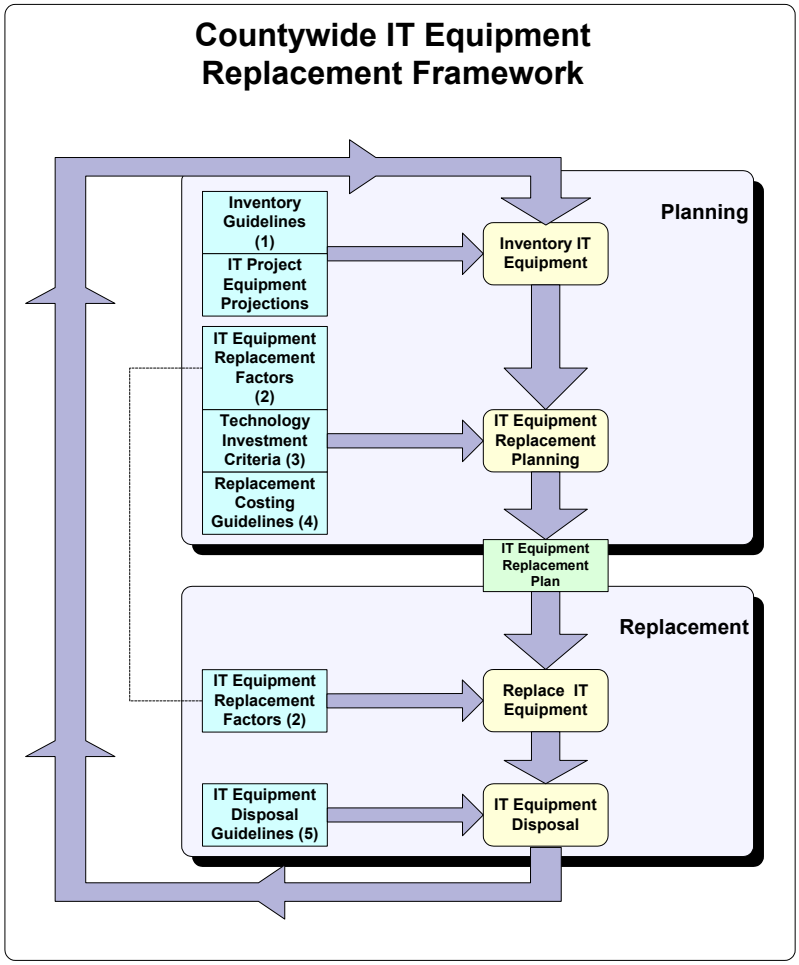
The King County Countywide Equipment Replacement process is typically a cyclical process. The key phases are Planning and Replacement. The following outlines the primary steps within the phases:

Planning
Develop a plan for replacing equipment:

- Inventory IT Equipment
- IT Equipment Replacement Planning

Replacement
Replace equipment as necessary according to established replacement factors:

- Replace IT Equipment
- IT Equipment Disposal



PLANNING

EQUIPMENT INVENTORY

Conduct an inventory of the equipment to be included in the IT Equipment Replacement plan. The chart to the right contains a list of the types of equipment to consider for inclusion in the inventory. The Appendix: Equipment Types to be Replaced, contains a text version of the Inventory Guidelines to assist departments in developing their own lists. This list is illustrative, is not intended to be all-inclusive, and may be modified to meet department business needs. The inventory contains some equipment that may be unique to one department, such as ATM switches and Email Servers are only replaced by the central IT division (ITS). The inventory also contains some low cost equipment such as pagers, cell phones and PDAs, that only make sense in an equipment replacement plan when there are significant quantities or they are critical to an essential business function. The inventory contains individual pieces of equipment, by serial number where possible. The following information is typically needed for each piece of equipment:

- Business Function – i.e. Payroll, Email, Staff Scheduling
- Application
- Equipment Category (Network Infrastructure, Servers, etc.)
- Equipment Type (see Appendix: Equipment Replacement Types)
- Existing or Planned
- King County Asset Management Tag #
- Serial Number
- Manufacturer
- Model
- Size – Capacity (CPU speed, memory, disk space, & other sizing characteristics)
- Purchase Date
- Purchase Cost
- Vendor Non Supported Date - date when vendor will stop supporting

The inventory can also contain equipment that is planned for a project, but hasn't yet been purchased and installed. This will make sure that new equipment gets on the replacement cycle and will be planned in future year budgets.

The Appendix contains an Inventory Template, to be used as a guide in collecting an inventory of equipment to be replaced.

Inventory Guidelines (1)

Equipment Types to be Replaced

Network Infrastructure
- ATM switches
- Communication circuits
- Ethernet switches
- Hubs
- Routers
- Test equipment

Servers
- Application (Development)
- Application (Production)
- Application (Test - QA)
- Backup & restore services
- CD-ROM
- Communications
- Database (Development)
- Database (Production)
- Database (Test - QA)
- DHCP
- DNS services
- Domain controller
- Email
- File & Print
- FTP server
- Mainframe
- Network backup
- Network management
- Network monitoring
- Remote access
- SAA gateway services
- Security
- SLP directory service agent
- Specialty
- Terminal server
- Time
- Web

Workstations
- Desktop Windows
- Desktop Macintosh
- Laptop Windows
- Laptop Macintosh
- PDA
- Unix

Telecommunications
- Circuits
- PBX
- Voice mail

Wireless
- Bridges
- Cell phones
- LANs
- Mobile data terminals
- Pagers
- Radio systems

Peripherals
- All-in-one (scanner, printer, fax)
- Disk units
- External CD burners
- Fax machines
- Jukebox
- Modems
- Plotter
- Printers
- Scanners
- Tape units
- UPS

Miscellaneous Equipment
- Racks
- Cabinets
- Seismic equipment
- Equipment in wiring closets

IT EQUIPMENT REPLACEMENT PLANNING

IT Equipment Replacement planning is the process to take the inventory and determine when the equipment needs to be replaced, and is conducted after the inventory has been collected. Replacement planning is all about estimating when replacement might occur, not determining when it will actually occur. The planning is based on assumptions about when a piece of equipment might need to be replaced, which can be driven by industry standards, cost-effective support, business needs, capacity issues, trouble history and many other factors. In reality, that equipment might need to be replaced sooner or later. The replacement planning helps identify the amount of funds to have available for replacement in any given year. This gives budget staff the information needed to plan to have the funds available when needed.

Replacement Analysis
Many of the replacement factors require an analysis to determine whether the equipment needs to be replaced. The analysis should be documented and included in the replacement plan. One example is to analyze capacity, which is increasing because of business changes.

> Capacity Analysis Example:
> If a particular server is running at 50% capacity with 50 users and the group plans to hire 25 users per year for the next 4 years, the equipment will be at full capacity in two years. Usually, the equipment would be scheduled for replacement well before full capacity is reached. The documentation of the analysis would identify at what percent of capacity replacement is performed and why. This kind of analysis, or typically much more sophisticated analysis is used to substantiate the need for replacement.

The planned replacement date can be determined by many factors. The chart to the right, "IT Equipment Replacement Factors", is provided to assist users in determining the reasons for replacing the equipment. Identify the analysis for each of the replacement factors for each piece or group of equipment. Calculate and record the replacement date for each replacement factor in each case. Whichever date occurs first is the planned replacement date. Useful life can be determined by researching industry standards.

> **Useful Life** is defined as the number of years a piece of equipment is expected to provide acceptable performance. This is only an estimate – usually determined by the manufacturer or established as an industry guideline. The actual useful life could be shorter or longer depending on many factors. (See Appendix: Useful Life - for a chart from the Gartner Group on Useful life.)

IT Equipment Replacement Factors (2)

Failed - Equipment that is broken and has ceased to function or is unreliable.

Non-Supported - Equipment that has reached a point in the vendor's lifecycle where it is no longer supported or where cost effective maintenance has become an issue.

Upgrade - Equipment that is no longer meeting the business need it serves, including:
- Lack of capacity
- Application changing
- Business needs changed
- Maintenance costs higher than replacement costs
- Useful life projection
- Incompatible

This analysis is documented in the Replacement Analysis Template and linked to the equipment being replaced in the IT Equipment Replacement Plan. There is a worksheet titled Replacement Analysis & Justification where each analysis can be documented and given a name. That name would also be entered in the Equipment Replacement Plan worksheet in the column titled Replacement Analysis. That provides a cross-reference from the Replacement Plan to the Replacement Analysis documentation.

The replacement analysis should record the following in the IT Equipment Replacement Plan:

- Replacement Factor that drives the planned replacement date
- Link to the Replacement Analysis
- Planned Replacement Date

Replacement Analysis can be documented for an individual piece of equipment, but would usually be developed for a group of similar pieces of equipment. All of the equipment needed for a particular application may have been purchased and installed as one system, and may need to be replaced as a unit. Large quantities of printers or computers might be handled in groups based on like characteristics or replacement needs.

Investment Justification
Investment justifications can be documented in the IT Equipment Replacement plan. The chart to the right, Technology Investment Criteria, describes possible business justifications for replacing the equipment. These justifications may be documented for each piece of equipment or for groups of equipment, as part of the Replacement Analysis above. The justification would explain how one or more of the conditions in the chart will be satisfied by the project, and are documented in the Replacement Analysis.

Just as explained in the Replacement Analysis section above, equipment would normally be grouped together and justified for the grouping. One example would be all of the equipment needed for a particular application might be justified by the need caused by upgrading the application, which then requires new equipment.

Replacement Costing
The chart to the right, Replacement Costing Guidelines, identifies the recommended factors used in calculating the replacement cost. The replacement cost can be estimated using the current cost or other cost data available that will help predict the costs in the future. In general, increasing those future costs for inflation may not be necessary because IT equipment costs have historically gone down over time. The cost of replacement is placed in the column of the year identified as the "Planned Replacement Date".

> Replacement Costing Example:
> Assume that it has been determined that a new server needs to be replaced in 2005. 2005 would be entered into the Equipment Replacement Plan template under the column "Planned Replacement Date" and the estimated cost for replacement would be entered under the section titled "Replacement Costs" in the column titled "2005" on the line identified for this server.

For an extended horizon, the next replacement date can be calculated by figuring the number of years from the purchase date to the planned replacement date, and adding those years to the planned replacement date, giving a second planned replacement date, and so on.

The replacement costing would record the following in the IT Equipment Replacement Plan:

- Replacement costs for each year on the replacement horizon

Technology Investment Criteria (3)

Strategic Investments
Addresses one or more:

- Enable the county to achieve defined strategic business objectives
- Provide for critical and essential health or life-saving services to citizens
- Streamline business operations using cost-effective technology
- Achieve direct cost savings over the cost of current operations
- Leverage existing investments
- Provide technology to meet federal and state mandates

Operational Investments
Limited to:

- Repairing or replacing defective or failing systems
- Achieving cost-effective compliance with legally-mandated, vendor support, or licensing requirements
- Upgrades or replacements that will result in documented cost savings
- Preventing disruption to business operations
- Accommodating employee special needs (e.g., ADA compliance)

Replacement Costing Guidelines (4)

- List of equipment to be replaced is based on Investment Criteria
- Estimated replacement date based on:
  - Useful life based on Gartner "non leading edge use" recommendations, or
  - Estimates derived during replacement planning
- Amounts based on current price
- Costs are identified based on the year needed.

IT Equipment Replacement Plan
The IT Equipment Replacement Plan contains the information recommended to plan the replacement of IT equipment and identify the projected costs. Appendix: IT Equipment Replacement Plan Template contains a template to record the information for an IT Equipment Replacement plan. The following information would typically be in the IT Equipment Replacement plan:

- Inventory information
- Replacement Factor driving the replacement
- A link to the Replacement Analysis and Justification
- Replacement Date
- Replacement costs for each year on the replacement horizon

IT Equipment Replacement Financial Plan
Even though this guide does not address funding, budgeting, and approval processes, a simple IT Equipment Replacement Plan has been included as a sample approach to tracking the monies involved in an equipment replacement plan. The IT Equipment Replacement Financial Plan records information about the funds needed, funds allocated, funds spent, and funds available. The IT Equipment Replacement Financial Plan is updated when changes occur. Appendix: IT Equipment Replacement Financial Plan Template provides a tool to use in managing an IT Equipment Replacement Financial Plan for those departments who don't already have a better way in place.

IT Equipment Replacement Planning Principles

The following general principles have been developed to help inform the replacement planning process:

1. The depth of equipment planning and analysis on IT equipment should be commensurate with the value of the assets purchased or supported.
2. Hardware and software replacement planning should be done in concert with one another to maximize the value of replacement funding.
3. Where appropriate, replacement planning should be conducted at a systems level to keep the focus on related hardware and software rather than individual components.
4. Purchases should be made consistent with applicable King County standards.
5. Strategies to reduce total cost of ownership (TCO) should be employed to optimize scarce resources and promote a cost effective computing environment.
6. Each County department director or agency head will be responsible for making equipment replacement decisions in accordance with their respective business, operational and financial plans.

REPLACEMENT

REPLACE EQUIPMENT

Replacing Equipment

The IT Equipment Replacement Factors are used to plan when equipment may need replacing, and then they are used again to determine the actual replacement. Management decisions using the replacement factors determine when equipment is actually replaced. A piece of equipment could have been planned for replacement three years from now because of a planned business change, but it might be replaced this year because it has failed (ceased to function). The Actual Reasons for Replacement are documented and inserted in the IT Equipment Replacement plan along with the Actual Replacement Date and the Actual Replacement Cost. The expenditure of funds is recorded in the IT Equipment Replacement Financial Plan.

IT Equipment Replacement Factors (2)

Failed - Equipment that is broken and has ceased to function or is unreliable.

Non-Supported - Equipment that has reached a point in the vendor's lifecycle where it is no longer supported or where cost effective maintenance has become an issue.

Upgrade - Equipment that is no longer meeting the business need it serves, including:
- Lack of capacity
- Application changing
- Business needs changed
- Maintenance costs higher than replacement costs
- Useful life projection
- Incompatible

Certain equipment should not just be replaced one piece at a time with like equipment. An analysis of the equipment replacement plan could show that grouping needs together could produce a better overall solution than just like for like replacement.

> An example replacing functionality rather than one for one equipment is: if a department has 10 servers that need replacement this year, and they have done the analysis to prove the need and developed a justification, they might develop their equipment replacement plan based on 10 servers, because that was the best information available at the time. But now that they are beginning to make the replacements, they determine that there is a pair of high availability servers that can meet the needs of all 10 servers for less cost and higher reliability. They should be encouraged to perform this analysis and implement the better solution.

The IT Equipment Replacement Plan is updated after replacements occur with the following information:

- Actual Reasons for Replacement
- Actual Replacement Date
- Actual Replacement Cost

EQUIPMENT DISPOSAL

Replacing equipment means purchasing and installing new equipment, but it also means disposing of the old equipment. The chart to the right, IT Equipment Replacement Disposal Guidelines, identifies guidelines for disposal. Two main steps for disposal are:

1. Dispose of the equipment following best practices and advice from King County's surplus group, until IT Equipment Replacement Disposal Guidelines are developed.
2. Update IT Equipment Replacement Plan and Inventory to indicate equipment is gone.

IT Equipment Disposal Guideline(5)
Dispose of replaced equipment outside the county unless analysis determines that internal reuse provides sufficient benefit. Use recommended disposal methods.

Some departments redeploy disposed of equipment for lesser functions. It is important to conduct periodic reviews to determine if reuse continues to be a good course of action.

Equipment Disposal records the following in the IT Equipment Replacement Plan:

- Disposal Date
- Disposal Method

APPENDIX

EQUIPMENT REPLACEMENT TYPES

Equipment Category	Equipment Type	Equipment Category	Equipment Type
Network Infrastructure	ATM switches Communication circuits Ethernet switches Hubs Routers Test equipment	**Wireless**	Bridges Cell phones LANs Mobile data terminals Pagers Radio systems
Servers	Application (Development) Application (Production) Application (Test - QA) Backup & restore services CD-ROM Communications Database (Development) Database (Production) Database (Test - QA) DHCP DNS services Domain controller Email File & Print FTP server Mainframe Network backup Network management Network monitoring Remote access SAA gateway services Security SLP directory service agent Specialty Terminal server Time Web	**Peripherals**	All-in-one (scanner, printer, fax) Disk units External CD burners Fax machines Jukebox Modems Plotter Printers Scanners Tape units UPS
Workstations	Desktop Windows Desktop Macintosh Laptop Windows Laptop Macintosh PDA Unix	**Miscellaneous Equipment**	Racks Cabinets Seismic equipment Equipment in wiring closets
Telecommunications	Circuits PBX Voice mail		

INVENTORY TEMPLATE

Budget Year:	2004		Inventory										
Department:													
Fund:													
Contact Name:													
Business Function - i.e. Payroll, Email, Staff Scheduling	Application Name	Equipment Category	Equipment Type	Existing or Planned	King County Asset Mgmt Tag #	Serial Number	Manufacturer	Model	Size – Capacity (CPU speed, memory, disk space, etc.)	Purchase Date	Purchase Cost	Vendor Unsupport Date

IT EQUIPMENT REPLACEMENT PLAN TEMPLATE

Budget Year:	2004		Equipment Replacement Plan													
Department:																
Fund:																
Contact Name:																
Inventory														**Replacement Planning**		
Business Function - i.e. Payroll, Email, Staff Scheduling	Application Name	Equipment Category	Equipment Type	Existing or Planned	King County Asset Mgmt Tag #	Serial Number	Manufacturer	Model	Size – Capacity (CPU speed, memory, disk space, etc.)	Purchase Date	Purchase Cost	Vendor Unsupport Date		Replacement Factor driving the replacement	Replacement Analysis (see Replacement Analysis worksheet)	Planned Replacement Date

(continued)

Replacement Costs						**2004**	**Funding**		**Actual Replacement Information**			**Disposal**	
2004	2005	2006	2007	2008	2009	Funded Amount	Unfunded Amount	Vendor Non Supported & Unfunded Amount	Replacement Reasons	Replacement Date	Replacement Cost	Disposal Date	Disposal Method

REPLACEMENT ANALYSIS TEMPLATE

The Replacement Analysis is a part of the IT Equipment Replacement Plan where each reason for replacement is documented, along with the analysis, and can be tied back to the individual items in the plan.

Budget Year:	2004	**Replacement Analysis & Justification**
Department:		
Fund:		
Contact Name:		

Instructions:

For each analysis and justification, enter the name of the analysis in the left column, and a description of the analysis in the right column. Place the name of the analysis in the Replacement Plan worksheet, under the column "Replacement Analysis" for each piece of equipment that pertains to this replacement analysis and justification.

Replacement Analysis Name	Replacement Analysis & Justification Description

IT EQUIPMENT REPLACEMENT FINANCIAL PLAN TEMPLATE

Budget Year:	2004	Equipment Replacement Financial Plan						
Department:								
Fund:								
Contact Name:								
	Previous Years	2003	2004	2005	2006	2007	2008	2009
Budget	$0	$0	$0	$0	$0	$0	$0	$0
Actuals	$0	$0						
Annual Balance		$0	$0	$0	$0	$0	$0	$0
LTD Balance	$0	$0	$0	$0	$0	$0	$0	$0
Need		$0	$0	$0	$0	$0	$0	$0
Annual Overage		$0	$0	$0	$0	$0	$0	$0
LTD Overage		$0	$0	$0	$0	$0	$0	$0

USEFUL LIFE

Useful Life by Equipment Class		
by The Gartner Group		
11-Mar-03		
Class of Equipment	**Primary Useful Life**	**Secondary Useful Life**
Desktops	48 months	12 additional months
Laptops	36 months	12 additional months
Intel Servers	36 months	24 additional months
Mainframes	36 months	24 additional months
FAS (Fabric Attached Storage)	36 Months	12 additional months
Useful Primary Life - The period that the equipment can be used in the technically most efficient manner by a leading edge or near leading edge IT organization. The equipment will be fully compatible with leading edge applications and hardware. The newest equipment may have some additional functionality but the old equipment would be able to adequately meet normal production requirements.		
Useful Secondary Life - The equipment continues to be able to function properly for most tasks but not all leading edge tasks; however, the cost of operation especially in the area of maintenance may force replacement by leading edge organizations.		
These Useful Life estimates are provided as general rules of thumb and may vary between enterprises based on their own specific business, financial and technological requirements.		